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Transmitted herewith for filing under 37 C.F.R. §1.53(b) is the nonprovisional, noncontinuing patent application for:

First Named Inventor or
Application Identifier:
Christopher Hugh Williams

- Noncontinuing Utility* §1.53(b)-1-1198

(X) Priority of application number 9805730.0 filed on March 17, 1998 in Great Britain is claimed under 35 U.S.C. §119.

() A certified copy of the priority document is enclosed.

() A MicroFiche Computer Program (Appendix) is enclosed.

() A Nucleotide and/or Amino Acid Sequence Submission is enclosed.

() A Computer Readable Copy is enclosed.

() A Paper Copy (Identical to Computer Copy) is enclosed.

() A Statement Verifying Identity of above Copies is enclosed.

(X) The filing fee is calculated below:

Fee Calculation For Claims As Filed

(a) Basic Fee \$ 760.00

(b) Independent Claims 1 - 3 = 0 x \$ 78.00 = \$ 0.00

(c) Total Claims 7 - 20 = 0 x \$ 18.00 = \$ 0.00

(d) Fee for Multiply Dependent Claims \$260.00 \$

Total Filing Fee \$ 760.00

() A Statement(s) of Status as Small Entity is enclosed, reducing the Filing Fee by half to: \$

() A check in the amount of \$ to cover the filing fee is enclosed.

() Charge \$ to Deposit Account No. 06-1135.

(X) The payment of the Filing Fee is to be deferred until the Declaration is filed. Do not charge our Deposit Account.

(X) A separate written request under 37 C.F.R. §1.136(a)(3), which is a general authorization to treat any concurrent or future reply requiring a petition for an extension of time under 37 C.F.R. §1.136(a) for its timely submission as incorporating a petition for an extension of time for the appropriate length of time, is enclosed.

(X) The Commissioner is hereby authorized to charge any additional fees which may be required in this application under 37 C.F.R. §§1.16-1.17 during its entire pendency, or credit any overpayment, to Deposit Account No. 06-1135. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1135. This sheet is filed in triplicate.

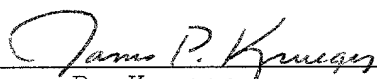
() Also enclosed:

(X) Address all future communications to:

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March 11, 1999

(Date)


James P. Krueger
Registration No. 35,234

- 1 -

COLLATING DEVICEBackground of the Invention

5 The present invention relates to a collating device, for example for use in mailing machines which collate sheet material for mailing, fold the collated material and insert it into envelopes.

10 A known collating device is shown in Figures 1 and 2. The device 20 comprises conveyor rollers 21 on a shaft 22, the rollers engaging further conveyor rollers 24 on a shaft 25. As shown in Figure 2, sheets extracted from a feeding station are fed into the collator device between the
15 rollers 21 & 24 by a rotary drive applied to the shaft 22. The sheets emerge from between the rollers 21 & 24 to enter between a base or lower support plate 27 and an upper or guide plate 29. The path followed by each sheet is curved, as indicated by arrow 30, but once the sheet has fully
20 entered between the plates 27 & 29, it will lie flat so that the next sheet fed in will overlies it.

 The shaft 25 mounts not only the rollers 24 but also rollers 31 engaged with rollers 32 on a third shaft 34. The
25 shaft 25 is stationary, and the rollers 24 and 31 are free-running thereon. Thus, rotation of the shaft 34 may effect discharge of a set of sheets accumulated in the collator device.

30 The discharge of an accumulated stack of sheets from the collator device can be assisted by the inclination of

the base plate 27 as shown. Additionally or instead, the sheets can be fed in against a stop member 36 at the inner end of the device, the stop member being biased by a spring 37. Alternatively, the discharge can be assisted by a solenoid operated pusher located at the position of the stop member 36, the pusher being actuated at the beginning of each discharge operation.

This type of collating device requires the various rollers to be driven selectively in order alternately to feed sheets into the device, and to discharge the collated sheets. The present invention aims to provide a more simple device which is easier to operate.

Brief Summary of the Invention

According to the present invention, there is provided a collating device for sheet material comprising a collating station having a pair of guide members for receiving sheets to be collated through an opening therebetween, first conveyor means for conveying sheets consecutively into the collating station and second conveyor means for conveying a collated stack of sheets out of the collating station, support means biased towards a position for supporting sheets in the collating station away from the second conveyor means, and an actuator member movable to urge a collated stack of sheets towards the second conveyor means against the bias of the support means.

Preferably, the support means is a flexible member

mounted adjacent the opening between the guide members, and the actuator member is mounted across the guide members to form a closed end of the collating station.

5 The first conveyor means may be a nip between a first and a second roller or set of rollers, and the second conveyor means may be a nip between the second and a third roller or set of rollers. Thus, the flexible member may be arranged to support sheets in the collating station in a
10 position between the first and second nips resting against the second roller(s). The actuator member may then be movable towards the opening between the guide members so as to urge the sheets against the second roller(s). The sheets may thus frictionally engage the second roller(s) and be
15 conveyed into the second nip.

 Thus, in accordance with this invention, the rollers may be continuously operated during the collating and discharge processes.

Brief Description of the Drawings

20 In order that the invention may be more readily understood, reference will now be made, by way of example, to the accompanying drawings, in which :

 Figure 1 is a schematic cross-sectional side view of a collating device according to the prior art;

 Figure 2 is a schematic plan view of part of the device shown in Figure 1; and

30 Figure 3 is a schematic cross-sectional side view of a collating device according to the present invention.

Detailed Description

Referring to Figure 3, the collating device includes a first and a second roller or set of rollers 2,4 which cooperate to form a first nip 3 for conveying sheets towards a collating station 1. The second roller 4 further cooperates with a third roller or set of rollers 6 to form a second nip 5 for conveying a collated stack out of the collating station 1. The collating station 1 comprises a lower support plate 8 and an upper guide plate 10. A flexible lip 12 extends from the support plate 8 to a position adjacent the second roller 4 between the first and second nips 3,5. An actuator 14 is mounted across the plates 8, 10 forming a closed end of the collating station 1, and is moveable towards or away from an opening 9 between the plates 8, 10.

In use, the rollers 2,4,6 are driven in the directions shown by the arrows such that a sheet 16 entering the first nip 3 is conveyed into the collating station 1 between the plates 8, 10. When a sheet 16 has entered the collating station 1 and the trailing edge 18 of the sheet 16 leaves the nip 3 it drops down and comes to rest supported on the flexible lip 12, and resting against the rotating edge of the second roller 4.

The actuator 14 may be positioned such that in this position the leading edge 17 of a sheet 16 in the collating station 1 abuts the actuator 14. Alternatively, the actuator 14 may be positioned further away from the opening. Further sheets may be fed into the collating

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CLAIMS

1. A collating device for sheet material comprising a collating station having a pair of guide members for receiving sheets to be collated through an opening therebetween, first conveyor means for conveying sheets consecutively into the collating station and second conveyor means for conveying a collated stack of sheets out of the collating station, support means biased towards a position for supporting sheets in the collating station away from the second conveyor means, and an actuator member movable to urge a collated stack of sheets towards the second conveyor means against the bias of the support means.

2. A collating device as claimed in claim 1, wherein the support means is a flexible member mounted adjacent the opening between the guide members.

3. A collating device as claimed in claim 1, wherein the actuator member is mounted across the guide members to form a closed end of the collating station.

4. A collating device as claimed in claim 1, wherein the support means is arranged to support sheets in the collating station in a position between the first conveyor means and the second conveyor means.

5. A collating device as claimed in claim 1, wherein the first conveyor means is a nip between a first and a second roller or set of rollers and the second conveyor means is a

nip between the second and a third roller or set of rollers.

6. A collating device as claimed in claim 5, wherein the support means is arranged to support sheets in the collating station in a position resting against the second roller or set of rollers.

7. A collating device as claimed in claim 5, wherein the actuator member is movable towards the opening between the guide members so as to urge a collated stack of sheets against the second roller or set of rollers.

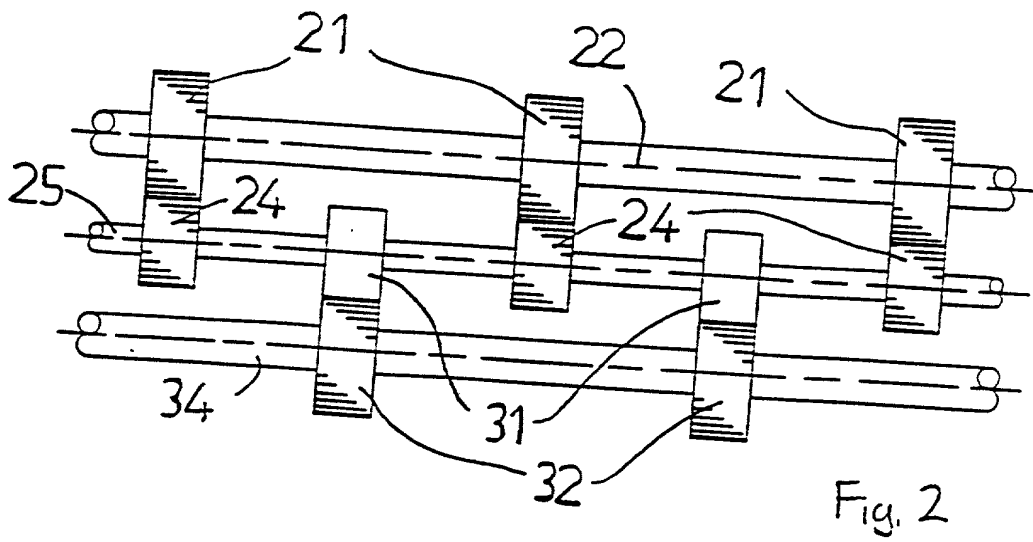
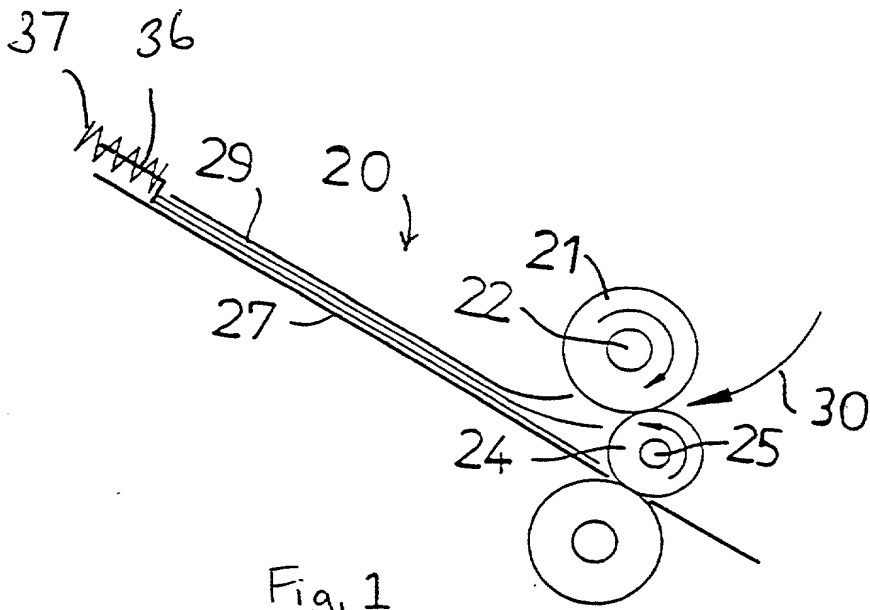
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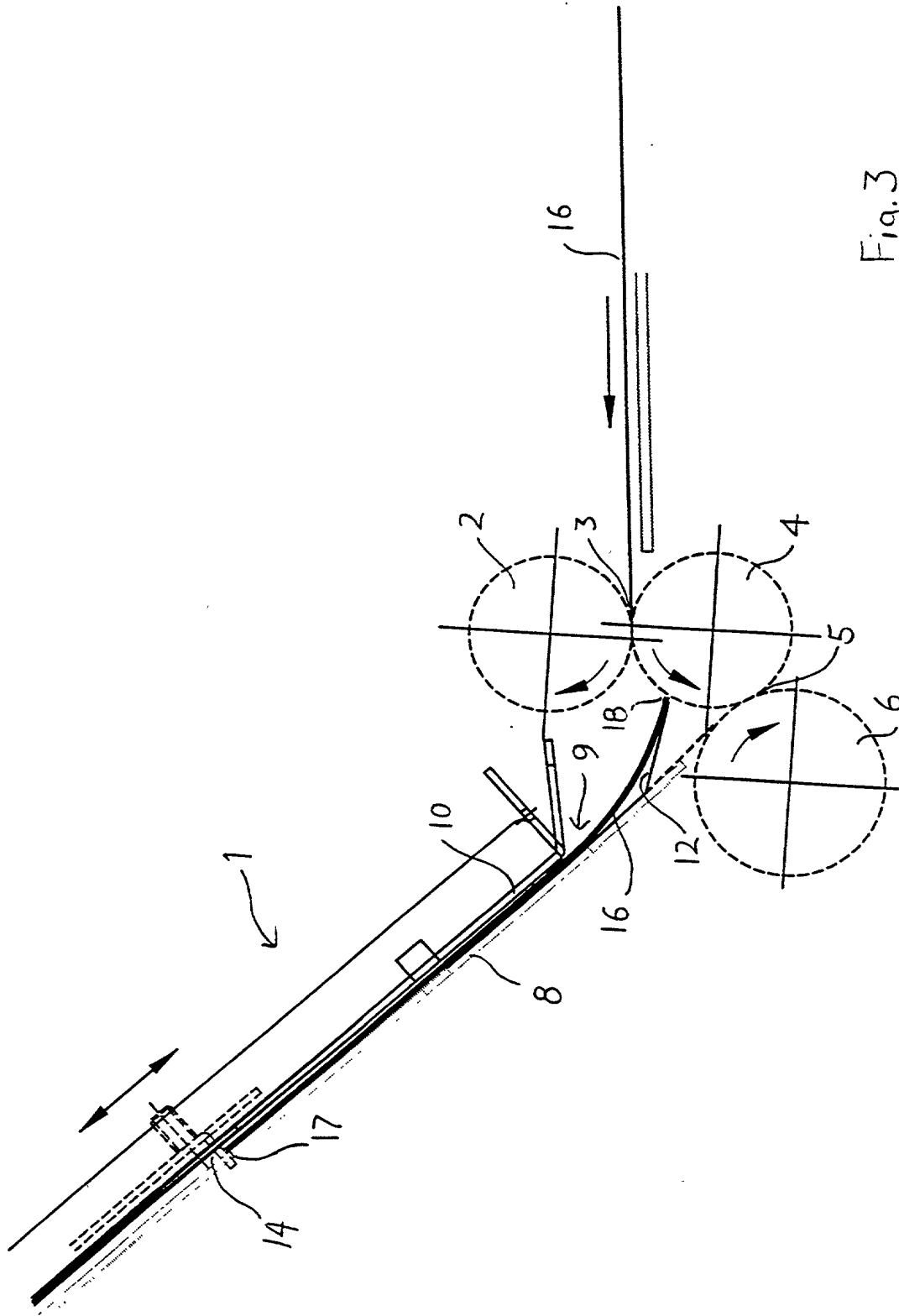
Abstract of the Disclosure

A Collating Device

A collating device for sheet material comprises a collating
5 station (1) having a pair of guide members (8, 10) for
receiving sheets to be collated through an opening (9)
therebetween, first conveyor means (3) for conveying sheets
consecutively into the collating station and second
conveyor means (5) for conveying a collated stack of sheets
10 out of the collating station, support means (12) biased
towards a position for supporting sheets in the collating
station away from the second conveyor means, and an
actuator member (14) movable to urge a collated stack of
sheets towards the second conveyor means against the bias
15 of the support means.

Figure 3





**DECLARATION
FOR UTILITY OR DESIGN
PATENT APPLICATION**

☒ Declaration Submitted With Initial Filing ☐ Declaration Submitted After Initial Filing) Attorney Docket No.: 65522
)
) First Named Inventor:
) Christopher Hugh Williams
)
) Application Number: Not yet assigned
) Filing Date: March 11, 1999
)
) Group Art Unit: Not yet assigned
) Examiner Name: Not yet assigned

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

COLLATING DEVICE

(Title of Invention)

the specification of which:

(X) is attached hereto, or

() was filed by an authorized person on my behalf on _____ (Date)
as United States Application Number _____
or PCT International Application Number _____,
and was amended on _____ (if applicable).
(Date)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below, and I have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application, on this invention filed by me or my legal representatives or assigns and having a filing date before that of the application on which priority is claimed:

Prior Foreign Application Number(s)	Country	Foreign Filing Date	Certified		Copy Attached	
			Priority Not Claimed		Yes	No
9805730.0	Great Britain	March 17, 1998	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
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			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet attached hereto.

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

Provisional Application
Number(s)

Provisional Application
Filing Date

☐ Additional provisional application numbers are listed on a supplemental priority data sheet attached hereto.

I hereby claim the benefit under Title 35, United States Code, §120, of any prior United States application(s), or under §365(c) of any PCT international application(s) designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information known by me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56, which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Prior U.S. Application Number	Prior PCT International Application Number	Filing Date of U.S. or PCT International Application	Patent Number (if applicable)

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet attached hereto.

As a named inventor, I hereby appoint the following registered practitioners, with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and request that all correspondence and telephone calls in respect to this application be directed to FITCH, EVEN, TABIN & FLANNERY, Suite 1600, 120 South LaSalle Street Chicago, Illinois, 60603-3406, Telephone No. (312) 577-7000, Facsimile No. (312) 577-7007:

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James J. Hamill	19,958	Jeannette M. Walder	30,698
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Philip T. Petti	31,651	Jay A. Saltzman	38,293
John S. Paniaguas	31,051		
Richard A. Kaba	30,562		
Karl R. Fink	34,161		

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made herein on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity or enforceability of the application or any patent issued thereon.

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(Given names first, with Family name last)

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